

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/002118

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC<sup>7</sup> C12Q-1/68

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC<sup>7</sup> C07, C12, A61

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)  
Canadian Patent Database, DELPHION, USPTO, ESPACENET, PUBMED  
Neutral probe, neutral capture probe, DNA, detection, hybridization, peptide nucleic acid, PNA, methylphosphonate, cationic polymer, conductive polymer, electrostatical, polythiophene, enzyme, alkaline phosphatase, unlabeled, probe array

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 2003/0152995 A1 (HANNAH, E.) 14 August 2003 Abstract; and paragraphs 55 and 63	1-24 (1st), 26-49 and 52-57
X	US 2002/0068295 A1 (MADOU, M. et al.) 6 June 2002 Abstract; and paragraphs 5, 22-24, 40, 54, 55, 65 and 67	1-24 (1st), 26-49 and 52-57
X	US 6,589,731 B1 (CHEN, L. et al.) 8 July 2003 Abstract; column 2, lines 12-25; column 4, line 13-18; column 4, lines 49-51; and claim 10	1-24 (1st), 26-49 and 52-57

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 25 February 2005 (25-02-2005)	Date of mailing of the international search report 21 April 2005 (21-04-2005)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer  Qianfa Chen (819) 994-1374

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
X	US 6,197,9419 B1 (TEOULE, R. et al.) 6 March 2001 Abstract; column 2, lines 5-19; column 2, lines 56-61; and column 6, lines 28-35	1-24 (1st), 26-49 and 52-57
X	WO 02/095052 (HYLDIG-NIELSEN, J. et al.) 28 November 2002 Abstract; page 2, lines 20-25; and page 8, line 14 to page 9, line 2	24 (2nd), 25, 50 and 51
Y	NILSSON, K. et al. (A). Self-assembly of synthetic peptides control conformation and optical properties of a zwitterionic polythiophene derivative. Proc. Natl. Acad. Sci. U.S.A., 2 September 2003, Vol.100, No.18, Pages 10170-10174 Abstract; page 10170, 1c, 2 <sup>nd</sup> paragraph; Figure 2; and Results and Discussion sections	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	NILSSON, K. et al. (B). Chip and solution detection of DNA hybridization using a luminescent zwitterionic polythiophene derivative. Nature Materials, June 2003, Vol.2, Pages 419-424 Abstract	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	WO 02/081735 A3 (LECLERC, M. et al.) 17 October 2002 Abstract	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	NIELSEN, P. et al. An introduction to peptide nucleic acid. Current Issues Molec. Biol., 1999, Vol.1, No.2, Pages 89-104 Abstract; page 91, lines 18-22; and page 93, lines 4 and 5	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y	US 2002/0177136 A1 (MCBRANCH, D. et al.) 28 November 2002 Paragraphs 3, 25 and 27-30	1, 2, 13, 17-19, 23, 24 (1st), 26-28, 39, 43, 44, 48, 49, 52-54
Y,P	DORÉ, K. et al. Fluorescent polymeric transducer for the rapid, simple, and specific detection of nucleic acids at the zeptomole level. J. AM. Chem. Soc. 7 April 2004, Vol.126, No.13, Pages 4240-4244 See the whole document	1-57

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A	LUKKARI, J. et al. Polyelectrolyte multilayers prepared from water-soluble poly (alkoxythiophene) derivatives. J. AM. Chem. Soc., 2001, Vol.123, Pages 6083-6091 See the whole document	1-57
A	FRITZ, J. et al. Electronic detection of DNA by its intrinsic molecular charge. Proc. Natl. Acad. Sci., 29 October 2002, Vol.99, No.22, Pages 14142-14146 See the whole document	1-57
A	SASTRY, M. Assembling nanoparticles and biomacromolecules using electrostatic interactions. Pure Appl. Chem., 2002, Vol.74, No.9, Pages 1621-1630 See the whole document	1-57
A	HO, H. et al. Optical sensor based on hybrid aptamer/conjugated polymer complexes. J. AM. Chem. Soc., 2004, Vol.126, Pages 1384-1387 See the whole document	1-57
A	WO 98/03499 (LECLERC, M. et al.) 29 January 1998 See the whole document	1-57
A	XIAO, S. et al. Selfassembly of metallic nanoparticle arrays by DNA scaffolding. J. Nanoparticle Res. 2002, Vol.4, Pages 313-317 See the whole document	1-57

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